

Western Upper Peninsula Regional State Forest Management Plan

Section 7. Forest Planning Glossary

Acre – A measure of land that occupies 43,560 square feet; (about 207 feet X 207 feet.) There are 640 acres in a square mile.

Age-Class Distribution – The proportionate representation of different age classes in a forest.

Area Regulation – An indirect method of roughly determining the amount of forest product to be annually or periodically harvested, on the basis of the total stocked area.

Barrens – Land with poor soil and dominated by herbaceous vegetation with very few shrubs or trees.

Basal Area – The cross-sectional area of all stems of a species or all stems in a stand measured at breast height and expressed per unit of land area (i.e., square feet per acre or square metres per hectare).

Biodiversity – The spectrum of life forms and the ecological processes that support and sustain them. Biological diversity occurs at four interacting levels—genetic, species, community and ecosystem. The variety of living organisms considered at all levels of organization, from genetics through species, to higher taxonomic levels, also; the term encompasses the variety of habitats and ecosystems supporting the organisms, as well as the processes occurring within those systems.

Coarse Filter Approach – A conservation strategy focused on addressing the habitat needs of wildlife (by definition, both aquatic and terrestrial species) to more effectively conserve rare, declining and common species statewide.

Carbon Sequestration – A term describing processes that remove carbon from the atmosphere. This can occur through a variety of means to artificially capture and store carbon, as well as enhancing natural sequestration processes in forests and oceans. These actions are intended to help mitigate global warming.

Cervid – An animal of the *Cervidae* family, which in Michigan includes white-tailed deer, elk and moose.

Community – An assemblage of species living together in a particular area, at a particular time, in a prescribed habitat. Communities usually bear the name of their dominant plant species, but include all the microbes, plants and animals living in association with the dominant plant species at a given time. A grouping of organisms which exist in the same general place and have mutual interactions.

Compartment – Blocks of state forest land that range from 1500 to 3000 acres in size. The size of a compartment is designed to facilitate systematic examination and treatment on a regular basis.

Conserve, Conserving and Conservation – **1.** Management of renewable natural resource with the objective of sustaining its productivity in perpetuity while providing for human use compatible with the sustainability of the resource; **2.** The process and measures for restoring natural biological diversity through management efforts, in order to protect, restore and enhance as much of the variety of native plant and animal species and communities as possible in quantities and distributions that provide for the continued existence and normal functioning of native species and communities, including the viability of populations throughout the natural geographic distributions of native species and communities.

Cover Type – The plant species dominating composition across a given area, for example oak, aspen or white pine.

DBH – Diameter at breast height (4½ feet) which is the standard height for measuring tree diameter.

Desired Future Condition – A statement that provides a broad vision for the future state of the forest. Michigan State Forest Management Plan April 10, 2008

Ecological Reference Areas (ERAs) – Areas that serve as models of ecological reference within the state and may be located on any forestland ownership. They are high quality examples of functioning ecosystems that are primarily influenced by natural ecological processes. ERAs are defined as areas that have a natural community classification global or state rank of G1, G2, G3, S1, S2, S3 and an element occurrence rank A or B. (Natural Community Rank and Element Occurrence in Michigan is determined by Michigan Natural Features Inventory (MNFI) using the internationally recognized

heritage methodology.) The initial set of ERAs is based on MNFI's current list of known high quality natural community sites (See Conservation Area Management Guidance). Additional ERAs will be identified through the biodiversity conservation planning process.

Ecology – The study of the linkages of organisms or groups of organisms and their environment, both biotic and abiotic.

Ecosystem – A dynamic and natural complex of living organisms interacting with each other and with their associated nonliving elements in the environment.

Ecosystem Diversity – The distinctive assemblages of species and ecological processes that occur in different physical settings of the biosphere.

Ecosystem management – A process that integrates physical, chemical, biological and ecological principles, along with economic and social factors, into a comprehensive strategy aimed at protecting and enhancing sustainability, diversity and productivity of a system.

Ecosystem Services – Processes by which the natural environment produces resources that are useful to people, including maintenance of air and water quality, groundwater recharge, conservation of soil resources, nutrient cycling, carbon sequestration, provision of habitat and biodiversity and attenuation of drought and flood conditions.

Ecoregion – Areas of relatively homogeneous ecological systems. Ecoregions are usually based on patterns of land use, topography, present and potential natural vegetation and soils. Ecoregion designations are used by resource managers to develop logical, regional strategies for land acquisition and management.

Ecounit – Geographic areas containing similar ecological patterns and processes whose boundaries closely align with Michigan's ecoregions. They were established by the DNR for organizing and administering assessment, planning, facilitating and updating of regional ecosystem management activities. Four eco-units were established—western Upper Peninsula, eastern Upper Peninsula, northern Lower Peninsula and southern Lower Peninsula. These four ecounits apply to all divisions. Representatives from each division will contribute to regional ecosystem planning, assessment and monitoring at the eco-unit level.

Ecounit Team – A team of DNR employees composed primarily of management unit supervisors from each division along with additional support personnel who are mandated to plan and coordinate management of an ecounit using ecosystem management principles.

Edaphic – Related to or caused by particular soil conditions.

Endemic – Indigenous to (native) or characteristic of a particular restricted geographical area.

Edge Habitat – The outermost band of habitat that surrounds a forest patch which has a species composition and structure that is significantly different from the interior of the patch. Edges can be a few to several hundred feet wide depending on environmental factors. Michigan State Forest Management Plan April 10, 2008

Endangered Species – Any plant or animal species defined through the Endangered Species Act of 1976 as being in danger of extinction throughout all or a significant portion of its range, and published in the Federal Register or a species that is in imminent peril of extinction or extirpation.

Extent – In the use of describing an indicator the term extent refers to both area and distribution.

Fine Filter Approach – A conservation strategy used when particular species do not respond positively to habitat or ecosystem-based conservation (coarse filter) approaches and additional management specifically directed toward their unique requirements is necessary. These unique species include those that respond to very specific changes within their habitat or ecosystem; species for which degradation or loss of habitat is not the primary threat and species that do not share habitat associations with other species of greatest conservation need. These species may not be adequately conserved through efforts addressing species assemblages.

Forest – An ecosystem characterized by a more or less dense and extensive tree cover, often consisting of stands varying in characteristics such as species composition, structure, age class, and associated processes and commonly including meadows, streams, fish and wildlife. A plant community or predominantly trees and other woody vegetation growing more or less closely together, its related flora and fauna and the values attributed to it.

Forest Fragment – An area on the landscape differing in appearance from its surroundings. Fragments may be due to natural (e.g., soil type) or anthropogenic (e.g., development) factors. Woodlots are examples of forested fragments within a landscape.

Forest Road – A hard surface road or dirt road, or other route capable of travel by a 2-wheel drive, 4-wheel conventional vehicle designed for highway use, except an interstate, state or county highway. Forest roads may be permanent or temporary and include haul roads, logging trails and skid trails.

Forest Trail – A designated path or way capable of travel only by a vehicle less than 50 inches in width.

Forest Treatments – Activities taken to modify the composition or structure of a forest stand to meet management objectives; such activities include commercial thinning or clearcut harvests, prescribed burns, noncommercial mechanical removal of undesired species, regeneration or understory planting and deliberate inaction.

Forest Type – A classification of forest land based on the species forming a plurality of live tree stocking.

GAP Land Protection Status:

Status 1: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events (of natural type, frequency, and intensity) are allowed to proceed without interference or are mimicked through management (concept: wilderness designation, ecological reserve, etc.).

Status 2: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state, but which may receive use or management practices that degrade the quality of existing natural communities (concept – park or natural area).

Status 3: An area having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses of either a broad, low-intensity type or localized intense type. It also confers protection to federally listed endangered and threatened species throughout the area (concept: public or private forest with timber extraction subject to a conservation easement).

Status 4: Lack of irrevocable easement or mandate to prevent conversion of natural habitat types to anthropogenic habitat types. Allows for intensive use throughout the tract. Also includes those tracts for which the existence of such restrictions or sufficient information to establish a higher status is unknown (concept: unrestricted forest lands).

Genetic Diversity – The differences in genetic composition within and among populations of a given species.

Geographic Information Systems or Science (GIS) – A system designed for the collection, storage and analysis of objects and phenomena where geographic location is an important characteristic. The study of this system is Geographic Information Science.

Goal – A concise statement which provides the means for the achievement of desired future conditions. Management goals may be short- or long-term in nature. Long-term management goals are necessary to help achieve desired future conditions.

Guideline – A non-mandatory means by which goals are achieved. Michigan State Forest Management Plan April 10, 2008

Habitat – The place where an organism lives and its surrounding environment including its biotic and abiotic components. Habitat includes everything an organism needs to survive.

Habitat Type System – A classification that uses the floristic composition of plant community (understory species as well as trees) as an integrated indicator of those environmental factors that affect species reproduction, growth, competition and; therefore, community development.

High Conservation Value Areas (HCVAs) – Areas (including ERAs) that have been recognized for their contribution to specific conservation objectives or attributes through a recognized DNR process such as legislation, administrative rule, Director's and Natural Resource Commission orders but not including the Open House/Compartment Review process. Examples of recognized processes include dedicated natural, wilderness or wild areas, natural rivers and the Strategy for Kirtland's Warbler Habitat Management (Michigan Department of Natural Resources et al. 2001).

Hydric – Wet

Hypsithermal – The period of maximum climatic warmth during an interglacial period.

Interior Habitat – Habitat within the interior of a forest patch that is removed from edge habitat, that is necessary for the persistence of certain forest plant and animal species, by providing insulation from edge effects such as noise, wind, solar radiation and increased predation.

Integrated Pest Management – The maintenance of destructive agents, including insects at tolerable levels, by the planned use of a variety of preventative, suppressive, or regulatory tactics and strategies that are ecologically and economically efficient and socially acceptable.

Karst – A type of terrain usually formed on carbonate rock (limestone and dolomite) where groundwater has dissolved the rock to enlarged openings and form a subsurface drainage system of caverns and sinkholes.

Lake Superior Syncline – A syncline is a geological term for a fold in the rocks of the Earth's crust in which the layers or beds dip inwards, thus forming a trough-like structure with a sag in the middle. The Lake Superior Syncline forms portion of the lake basin, extending from northern Wisconsin to the tip of the Keweenaw Peninsula of Michigan and into Ontario, Canada. The edges of the syncline are visible in the unique bedrock formations of the Keweenaw Peninsula and Isle Royale.

Landscape – An area composed of adjacent and interacting ecosystems that are related because of geology, land forms, soils climate, biota and human influences.

Landscape Scale – The appropriate spatial or temporal scale for planning, analysis, and improvement of management activities to achieve ecosystem management objectives.

Lacustrine – Found or formed in lakes.

Legacy Tree – A mature tree that is retained on a site after harvesting or natural disturbance to provide a biological legacy.

Mesic – Moderately moist.

Monitoring – Measures progress towards an objective or target, such as a desired future condition.

Monitoring Criteria – Measurement subjects or high level components of monitoring.

Moraine – A mass of rock, gravel and soil deposited directly by a glacier.

Objective – A concise, time-specific statement of measurable planned results that respond to pre-established goals. Objectives are more specific and concrete than goals.

Off-Road Vehicle (ORV) – A motor driven off-road vehicle capable of cross-country travel without benefit of a road or trail, on or immediately over land, snow, ice, marsh, swampland or other natural terrain. ORV includes, but is not limited to, a multi-track or multi-wheel drive vehicle, an all-terrain vehicle (ATV), a motorcycle or related 2-wheel, 3-wheel or 4-wheel vehicle, an amphibious machine, a ground effect air cushion vehicle or other means of transportation deriving motive power from a source other than muscle or wind.

Old Growth – As defined by the Natural Resources Commission on 12/8/94, old-growth forests are those that approximate the structure, composition and functions of native forests. These native conditions generally include more large trees, canopy layers, standing snags, native species and dead organic material, involve more complex ecological processes and undergo more gradual change than do young or intensively managed forests. Native forest conditions in Michigan also included ecologically important un-forested openings, early successional stages and extensive areas of catastrophic or frequent disturbance.

Poletimber – A live tree of commercial species at least 5.0 inches DBH, but smaller than sawtimber size. Harvested poletimber is sometimes referred to as cordwood.

Potential Old Growth – Areas inventoried and designated with a stand condition code of 8 within operations inventory for consideration as old growth.

Public – A group of people sharing a common interest or common characteristic—snowmobilers or residents of a county.

Rare Species – Species that have a limited range, or a limited number of individuals. This could include species found in very low numbers throughout their range or species that may have large local populations, but only a small number of total populations.

Recruitment – The additional trees moving from one size class to another.

Regeneration – the act of renewing tree cover by establishing young trees naturally or artificially (i.e., seeding or planting). Regeneration usually maintains the same forest type and is done promptly after the previous stand or forest was removed.

Removal Cut – Removal of overstory trees from a small understory trees so as to release the understory stand that are less than 20 years of age.

Resource Assessment – The determination of the significance, importance or value of a resource or a set of resources.

Restart Harvest – A harvest where essentially all trees have been removed in one operation – depending upon the management goals, a restart harvest may or may not have reserve trees left to attain goals other than regeneration.

Riparian Area – The area of transition between aquatic and terrestrial ecosystems in which the terrestrial ecosystem influences aquatic and vice-versa.

Riparian Management Zone – The defined area consciously managed to protect functions and values of riparian areas. It may be a subset of, may equal, or may exceed beyond the riparian area.

Rotation Age – 1. Accepted forestry definition: in even-aged silvicultural systems, the period between stand regeneration establishment and final harvest. 2. Practical definition used in DNR forest management: in even-aged silvicultural systems, the age when a forest stand is considered for possible final harvest, where the age of the stand will meet or exceed the IFMAP generic silvicultural age criteria during the year-of-entry. Example: An aspen stand in the 2015 inventory Year of Entry with a rotation age of 50 years will be considered for final harvest if the stand is at least 50 years of age in 2015.

Sapling – A live tree 1.0 to 5.0 inches DBH. Michigan State Forest Management Plan April 10, 2008

Sawtimber – A live tree of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer and meeting regional specifications for freedom from defect. Softwoods must be at least 9.0 inches DBH and hardwoods must be at least 11.0 inches DBH.

Seasonal Wetlands – Poorly drained, shallow depressions that may have standing water for a few weeks each year, but that are usually dry for much of the growing season.

Seed Tree Harvest – Most trees are removed from a stand, leaving a small number of designated seed trees.

Shelterwood Harvest – A cut designed to develop tree crowns in the remainder of the stand in preparation for another cut to be made in about ten years that will result in regeneration.

Silvicultural Criteria – The assemblage of abiotic and biotic factors (such as landform, soils, climate, life history characteristics of tree species, disease and insect pathogens) that when considered together govern establishment, growth, composition, health, and quality of forests. In practical application, when silvicultural criteria are met they trigger a management action.

Site Index – A numerical indicator of site quality based on tree height at a specified age used as coordinates for interpolating site index from a specially prepared set of graphed curves for a given species of tree.

Spatial Scale – The geographical size of a community, ecosystem or study. Spatial scale can range from a micro-site such as an underside of a leaf on the forest floor, to a forest, to a larger landscape. Operationally, spatial scale refers to the geographic extent at which certain processes operate within the environment. This could be the scale at which nutrients recycle in a wetland to the patterns of deer migration in the Upper Peninsula.

Special Concern Species – Species that have a limited range, or a limited number of individuals, so much so they are on the verge of becoming threatened or endangered.

Species – A group of individuals that can interbreed successfully with one another, but not with members of other groups. Plants and animals are identified as belonging to a given species based on similar morphological, genetic and biochemical characteristics.

Special Conservation Areas (SCAs) – Special conservation areas are areas of state forest land that have had one or more conservation objectives, interests or elements identified. The type and strength of recognition will vary depending on the process used to identify the conservation value. Some SCA designations will have the force of law (such as areas identified in land use orders of the director), some will be by cooperative agreement (such as National Natural Landmarks with the National Park Service), some will be by department process or agreement (such as deer yards, potential old growth and riparian buffers) and some will be identified by an external group or organization (such as Audubon's Important Bird Areas).

Species Diversity – The richness and variety of native species in an area. It includes not only the number of species in the area, but also their relative abundance and spatial distribution. Species richness is one component of species diversity, but not the only determinant.

Soil Detritus – Small pieces of dead and decomposing plants and animal that adds organic matter, nutrients and structure to the organic surface horizon of soils. Michigan State Forest Management Plan April 10, 2008

Stakeholder – Individuals or groups affected by and/or having an interest in the management of Michigan's natural resources and DNR programs. state, tribal, and local government agencies, academic institutions, the scientific community, nongovernmental entities including environmental, agricultural and conservation organizations, trade groups, commercial interests, private landowners and citizens.

Standard – A standard is a mandatory means by which goals are achieved. The intended purpose for standards is to reference procedures and laws that provide existing direction for the achievement of goals

Stand Condition 8 – One of many codes used in DNR Operations Inventory to describe the condition of a stand. Prior to the 2008 year of entry, the code stand condition 8 was used to designate forest areas as potential old growth. As of the 2008 year-of-entry, this designation has been changed to encompass other biodiversity values and includes areas designated as special conservation areas (of which old growth is a component), high conservation value areas, and ecological reference areas.

Stocking – An indication of growing-space occupancy relative to a pre-established standard. Common indices of stocking are based on percent occupancy, basal area, relative density, stand density, stand density index and crown competition factor.

Succession – The natural change in vegetation over time in the absence of disturbance or the artificial change in vegetation due to natural or human-caused disturbance.

Sustainable/Sustainability – Maintenance of healthy, functioning ecosystems capable of providing goods, services and processes upon which human welfare ultimately depends. Also, implied is the idea that the actions of the current generation will not diminish the resources and opportunities available to future generations. Sustainability is further defined in terms of a Criteria and Indicator framework (the Montreal Process, 2009) consisting of seven criteria, 11 critical elements and 54 indicators.

Temporal Scale – The time required to complete a study, a life history event or ecological process. Temporal scale can vary from a few seconds for biochemical reactions to thousands of years for ecosystem development. Operationally, temporal scale refers to the time extent certain processes operate in the environment. (The apparent spatial-operational scale of an ecological process will often change as the temporal-observational scale changes in the same process).

Threatened Species – A plant or animal species that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future.

Witness Trees – Trees marked with blazes by Government Land Office surveyors during the original survey of the state, to establish the location for township and section lines and township, section and quarter section corners. They are also known as line or bearing trees.

Xeric – Dry or desert like.

Year-of-Entry – The year in which treatments begin in a forest compartment.